

CLAIMS

1. A method of operation of a communication device, wherein the power
used to transmit pilot bits associated with data bits is at least partly
5 dependent on the data rate at which the data bits are transmitted.
2. The method of operation of a communication device as claimed in
claim 1, wherein additional bits are transmitted to minimize impact on
the power control process and minimize interference
10
3. The method of operation of a communication device as claimed in
claim 2, wherein the additional bits are power control bits or additional
pilot bits.

4. A method of operation of a communication device for transmitting pilot bits and data bits associated with the pilot bits, the method comprising the steps of:
 - 5 sending a first set of pilot bits at a first power level independent of the data rate of the associated data bits; and
 - sending a second set of pilot bits at a power level related to the data rate of the associated data bits.
- 10 5. The method of operation of a communication device as claimed in claim 4 wherein the power level of the second set of pilot bits is set to zero at low data rates of the associated data bits.
- 15 6. The method of operation of a communication device as claimed in claim 4 further comprising the steps of
 - determining a first gain factor for the first set of pilot bits;
 - determining a second gain factor for the second set of pilot bits;
 - determining a data gain factor for the data bits;
 - scaling the power at which the data bits and the pilot bits are
 - 20 transmitted in accordance with the respective gain factors and a received power control message.
- 25 7. The method of operation of a communication device as claimed in claim 6 wherein the second gain factor for the second set of pilot bits is set to zero at low data rates of the associated data bits.

8. A method of operation of a communication device comprising receiving pilot bits and data bits associated with the pilot bits from a user device, wherein the power of a first set of pilot bits is independent of the data rate of the data bits and the power of a second set of pilot bits is related to the data rate of the data bits, comprising the steps of:
5 deriving power control information from the first set of pilot bits;
deriving channel estimation information from the first set and second set of pilot bits.
- 10 9. The method of operation of a communication device as claimed in claim 8 also comprising the steps of:
generating a power control command based on the power control information; and
15 sending the power control command to the user device.
10. The method of operation of a communication device as claimed in claim 8 also comprising the step of:
using the channel estimation information in decoding and/or
20 demodulating the associated data bits.
11. The method of operation of a communication device as claimed in claim 8 wherein the second set of pilot bits are buffered prior to the step of deriving channel estimation information.
- 25 12. The method of operation of a communication device as claimed in claim 8, further comprising the steps:
determining the gain factor used for transmitting the second set of pilot bits;
30 wherein the step of deriving power control information includes the step of deriving power control information from the first set of pilot bits and also from the second set of pilot bits using the determined gain factor.

13. The method of operation of a communication device as claimed in claim 12, wherein the gain factor used for transmitting the second set of pilot bits is determined from signaling information received from the user device.

14. A communication device, transmitting pilot bits and data bits associated with the pilot bits, the communication device comprising:
- means for sending a first set of pilot bits at a first power level
 - 5 independent of the data rate of the associated data bits; and
 - means for sending a second set of pilot bits at a power level related to the data rate of the associated data bits.

15. A communication device comprising

means for receiving pilot bits and data bits associated with the pilot bits from a user device, wherein the power of a first set of pilot bits is

5 independent of the data rate of the data bits and the power of a second set of pilot bits is related to the data rate of the data bits;

means for deriving power control information from the first set of pilot bits; and

10 means for deriving channel estimation information from the first set and the second set of pilot bits.

16. A method of operation of a communication device comprising the steps:

receiving pilot bits, associated with data bits, at a received signal level from a user device;

comparing the received signal level to a plurality of threshold values;

transmitting a power control command to the user device indicating the position of the received signal level relative to at least one of the plurality of thresholds.

17. The method of operation of a communication device as claimed in claim 16 wherein the step of transmitting a power control command to the user device includes the step of transmitting multiple power control commands, each indicating the position of the received signal level to one of the plurality of thresholds.

18. The method of operation of a communication device as claimed in claim 16 wherein the thresholds define a plurality of areas and the step of transmitting a power control command to the user device indicating the position of the received signal level relative to at least one of the plurality of thresholds comprises the step of transmitting a power control command to the user device indicating the position of the received signal level within one of the areas defined by the thresholds.

19. A method of operation of a communication device comprising the steps
 sending pilot bits associated with data bits at a transmit power level at
 least partly dependent upon the data rate at which the data bits are
 5 transmitted
 receiving a power control signal indicating the relative position of a
 corresponding received signal level and at least one of a plurality of
 threshold levels;
 incrementally adjusting the transmit power level dependent on the
 10 transmit power level and the indicated relative position
20. The method as claimed in claim 19 wherein the step of sending pilot
 bits associated with data bits at a transmit power level at least partly
 dependent upon the data rate at which the data bits are transmitted
 15 comprises the steps of:
 determining a gain factor for transmitting the data bits;
 determining a gain factor for transmitting the pilot bits dependent on the
 data rate of the associated data bits; and
 scaling the power at which the data bits and the pilot bits are
 20 transmitted in accordance with the gain factors and a received power
 control message.
21. The method as claimed in claim 20 wherein the step of determining a
 gain factor for transmitting the pilot bits dependent on the data rate of
 25 the associated data bits comprises determining a base gain factor and
 adjusting the base gain factor by an incremental amount dependent on
 the data rate of the associated data bits.
22. The method as claimed in claim 19 wherein the step of receiving a
 30 power control signal indicating the relative position of a corresponding
 received signal level and at least one of a plurality of threshold levels
 comprises the step of receiving multiple power control commands,
 each indicating the position of the received signal level to one of the
 plurality of thresholds, further comprising the step of selecting a power

control command corresponding to the transmitted power level,
wherein the step of incrementally adjusting the transmit power is
carried out using the selected power control command.

- 5 23. The method as claimed in claim 19 wherein the step of receiving a
power control signal indicating the relative position of a corresponding
received signal level and at least one of a plurality of threshold levels
comprises the step of receiving a power control command indicating
the position of the received signal level within one of the areas defined
10 by the thresholds.

24. A communication device comprising:

means for receiving pilot bits, associated with data bits, at a received signal level from a user device;

5 means for comparing the received signal level to a plurality of threshold values; and

means for transmitting a power control command to the user device indicating the position of the received signal level relative to at least one of the plurality of thresholds.

25. A communication device comprising:

means for sending pilot bits associated with data bits at a transmit power level at least partly dependent upon the data rate at which the data bits are transmitted;

means for receiving a power control signal indicating the relative position of a corresponding received signal level and a plurality of threshold levels; and

means for incrementally adjusting the transmit power level dependent on the transmit power level and the indicated relative position.